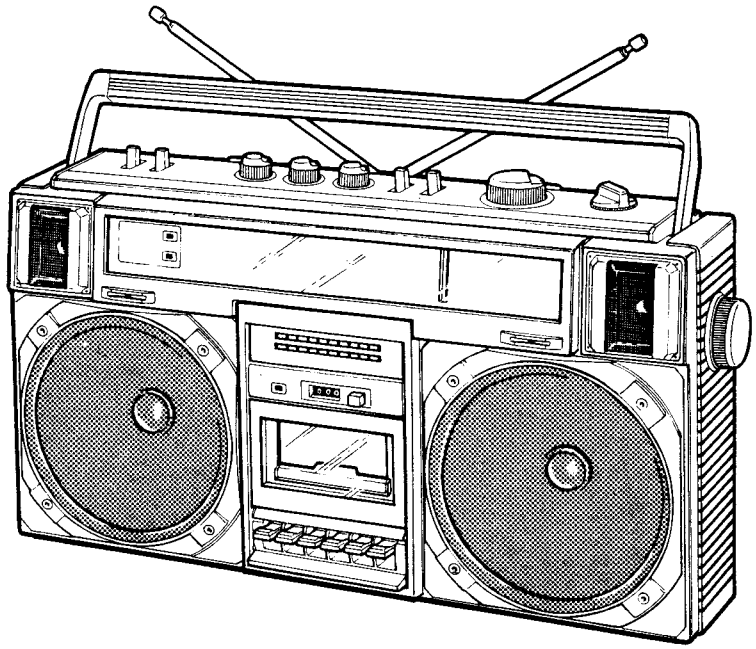
SERVICE MANUAL

CROWN JAPAN

CSC-950 SERIES

CSC-950F (X), 950L (E), L (UK), L (GE), L (FR)



Portable Type Stereo Cassette Tape Recorder with 4-Band Radio.

SPECIFICATIONS

■ RADIO SECTION	950F (X)		950L(E), (UK), (GE) (FR)	
Frequency Range	FM:	88 ~ 108 MHz	FM:	88 ~ 108 MHz
	SW2:	7.5 ~ 21.5 MHz	SW:	6 ~ 18 MHz
	SW1:	2.5 ~ 7.5 MHz	MW:	510 ~ 1605 kHz
	MW:	510 ~ 1605 kHz	LW:	150 ~ 300 kHz
Usable Sensitivity	FM:	7 μV	FM:	7 μV
	SW2:	50 μV	SW:	50 μV
	SW1:	450 μV/m	MW:	500 μV/m
	MW:	500 μV/m	LW:	1200 μV/m
IF	AM:	455 kHz	AM:	455 kHz L(E), L(FR)
				460 kHz L(GE)
				470 kHz L(UK)
	FM:	10.7 MHz	FM:	10.7 MHz
MPX Separation	FM:	25 dB		
Frequency Response	FM:	100 Hz ~ 10 kHz ± 6 dB		
	MW:	125 Hz ~ 2.5 kHz + 2/ − 8 dB		

■ TAPE RECORDER SECTION

Recording System	AC Bias, 4-track 2-channel, Stereo
Erase System	AC Erase
Tape Speed	4.75 cm/sec. + 3/ − 2%
Wow and Flutter	0.17% (Play, JIS WRMS)
Output Power	3.4W × 2 (10% T.H.D.) DC

■ OTHER SECTION

Power Source	AC:	110/200/240, F(X)
		220V L(E), L(GE), L(FR)
		240V L(UK)
	DC:	12V (UM-1) × 8
Dimension		537(W) × 290(H) × 125(D) mm
Weight		6 kg

CROWN RADIO CORP. JAPAN

TOKYO · OSAKA · SAN FRANCISCO · PANAMA · DÜSSELFORF · LONDON

DISASSEMBLY

1. Removal of Front Cabinet

1) Remove the 8 screws (1 through 8) shown in Fig. A.
2) Depress the eject button.
3) Remove the Cassette Holder shown in Fig. B.

Note: When removing the front cabinet, be careful not to damage the speaker lead and antenna lead.

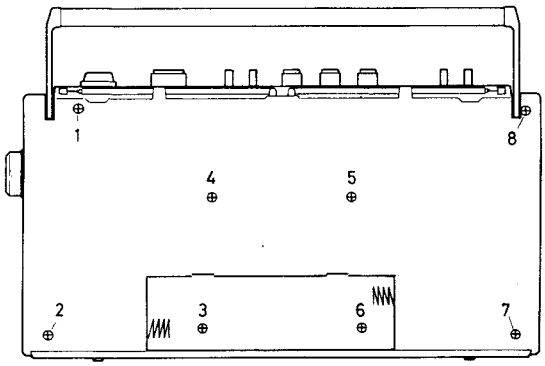
2. Removal of Mechanism

Remove the 4 screws (1 through 4) shown in Fig. C.

3. Removal of Amp, Tuner Board and Chassis

1) Remove the mechanism.
2) Pull and remove the knobs (Volume knob, Band Selector knob, Bass knob, Treble knob, Balance knob).
3) Remove the 9 screws (5 through 13) shown in Fig. C.

Fig. A



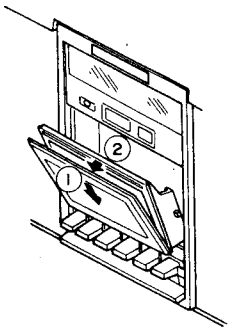
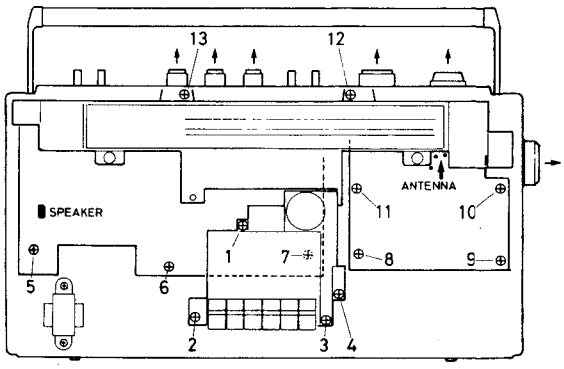


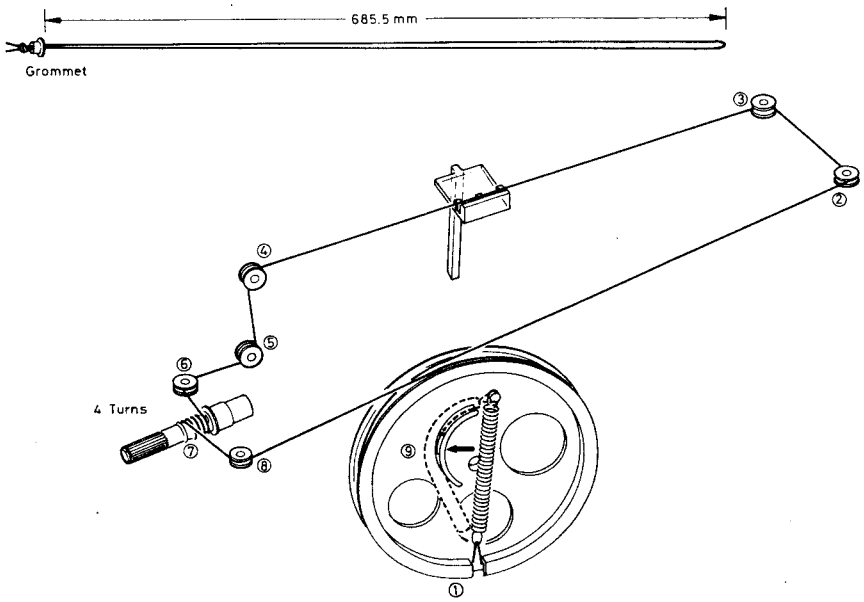
Fig. B

Fig. C



4. Dial Cord Stringing View

1) Insert both ends of the dial cord into the grommet. Tie the ends together so that a loop is formed. Secure the dialcord by crashing the grommet. Thread the dial cord throught the coil spring.
2) Arrange the dial cord in the numerical order while holding one end of the cord, then engage the coil spring as shown.



ELECTRICAL ADJUSTMENT

1. AM Alignment CSC-950F (X)

Adjustment	Equipment Connection	Step No.	Generator Frequency	Tuning	Location to be Adjusted
IF	● AM Signal generator ● Sweep/marker generator ● Oscilloscope ● AC voltmeter ● Loop antenna ● Load resistance ● Dummy antenna ● Frequency counter Connect measuring instruments as shown in Fig. 1 and 2.	1	455 kHz (Mod.)		AM, IFT-3, 4, 5 Adjustment for maximum. Fig. 1.
		2	Repeat Steps to obtain Maximum Output.		
MW Band		3	505 kHz (Mod.)	505 kHz	Set generator frequency to 505 kHz with L-7 (MW oscillator coil). Fig. 2.
		4	1650 kHz (Mod.)	1650 kHz	Set generator frequency to 1650 kHz with TC-4 (Trimmer condenser).
		5	Repeat Steps 3 and 4 two or three times to adjust f. cover.		
MW Tracking		6	610 kHz (Mod.)	610 kHz	Adjust L-9a (Bar antenna) to obtain maximum sensitivity. Fig. 2.
		7	1400 kHz (Mod.)	1400 kHz	Adjust TC-7 (Trimmer condenser) so to obtain maximum sensitivity.
		8	Repeat Steps 6 and 7 two or three times to obtain maximum sensitivity.		
SW1 Band		9	2.4 MHz (Mod.)	2.4 MHz	Set generator frequency to 2.4 MHz with L-6 (SW1 oscillator coil).
		10	7.6 MHz (Mod.)	7.6 MHz	Set generator frequency to 7.6 MHz with TC-5 (Trimmer condenser).
		11	Repeat Steps 9 and 10 two or three times to adjust f. cover.		
SW1 Tracking		12	3.2 MHz (Mod.)	3.2 MHz	Adjust L-9b (Bar antenna) to obtain maximum sensitivity.
		13	6.8 MHz (Mod.)	6.8 MHz	Adjust TC-8 (Trimmer condenser) so as to obtain maximum sensitivity.
		14	Repeat Steps 12 and 13 two or three times to obtain maximum sensitivity.		
SW2 Band		15	7.3 MHz (Mod.)	7.3 MHz	Set generator frequency to 7.3 MHz with L-5 (SW2 oscillator coil).
		16	22 MHz (Mod.)	22 MHz	Set generator frequency to 22 MHz with TC-3 (Trimmer condenser).
		17	Repeat Steps 15 and 16 two or three times to adjust f. cover.		
SW2 Tracking		18	9 MHz (Mod.)	9 MHz	Adjust L-8 (Antenna Coil) to obtain maximum sensitivity.
		19	20 MHz (Mod.)	20 MHz	Adjust TC-6 (Trimmer condenser) so to obtain maximum sensitivity.
		20	Repeat Steps 18 and 19 two or three times to obtain maximum sensitivity.		

○ Set the internal modulation signal generator to 30%, 400 Hz.
○ Use only nonmetallic alignment tools to insure proper alignment.

2. AM Alignment CSC-950L (E), (UK), (GE), (FR)

Adjustment	Equipment Connection	Step No.	Generator Frequency	Tuning	Location to be Adjusted
IF	● AM Signal generator ● Sweep/marker generator ● Oscilloscope ● AC voltmeter ● Loop antenna ● Load resistance ● Dummy antenna ● Frequency counter Connect measuring instruments as shown in Fig. 1 and 2.	1	455 kHz CSC-950L(E),(FR) 460 kHz CSC-950L (GE) 470 kHz CSC-950L (UK)		AM, IFT-3, 4, 5 Adjustment maximum. Fig. 1.
		2	Repeat Steps to obtain Maximum Output.		
MW Band		3	505 kHz (Mod.)	505 kHz	Set generator frequency to 505 kHz with L-6 (MW oscillator coil). Fig. 2.
		4	1650 kHz (Mod.)	1650 kHz	Set generator frequency to 1650 kHz with TC-4 (Trimmer condenser).
		5	Repeat Steps 3 and 4 two or three times to adjust f. cover.		
MW Tracking		6	610 kHz (Mod.)	610 kHz	Adjust L-9a (Bar antenna) to obtain maximum sensitivity.
		7	1400 kHz (Mod.)	1400 kHz	Adjust TC-7 (Trimmer condenser) so to obtain maximum sensitivity.
		8	Repeat Steps 6 and 7 two or three times to obtain maximum sensitivity.		
SW Band		9	5.85 MHz (Mod.)	5.85 MHz	Set generator frequency to 5.85 MHz with L-5 (SW oscillator coil).
		10	18.5 MHz (Mod.)	18.5 MHz	Set generator frequency to 18.5 MHz with TC-3 (Trimmer condenser).
		11	Repeat Steps 9 and 10 two or three times to adjust f. cover.		
SW Tracking		12	7 MHz (Mod.)	7 MHz	Adjust L-8 (Antenna coil) to obtain maximum sensitivity.
		13	16 MHz (Mod.)	16 MHz	Adjust TC-6 (Trimmer condenser) so as to obtain maximum sensitivity.
		14	Repeat Steps 12 and 13 two or three times to obtain maximum sensitivity.		
LW Band		15	145 kHz (Mod.)	145 kHz	Set generator frequency to 145 kHz with L-7 (Oscillator coil).
		16	310 kHz (Mod.)	310 kHz	Set generator frequency to 310 kHz with TC-5 (Trimmer condenser).
		17	Repeat Steps 15 and 16 two or three times to adjust f. cover.		
LW Tracking		18	180 kHz (Mod.)	180 kHz	Adjust L-9b (Bar antenna) to obtain maximum sensitivity.
		19	280 kHz (Mod.)	280 kHz	Adjust TC-8 (Trimmer condenser) so to obtain maximum sensitivity.
		20	Repeat Steps 18 and 19 two or three times to obtain maximum sensitivity.		

○ Set the internal modulation signal generator to 30%, 400 Hz of each.
○ Use only nonmetallic alignment tools to insure proper alignment.

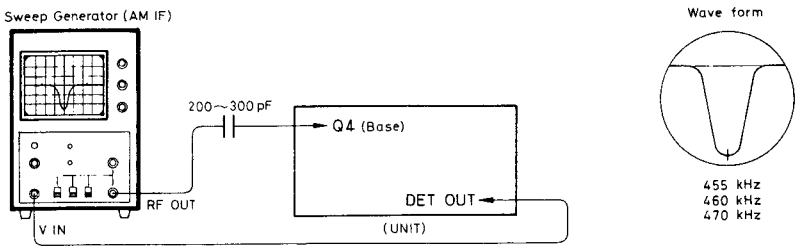


Fig. 1

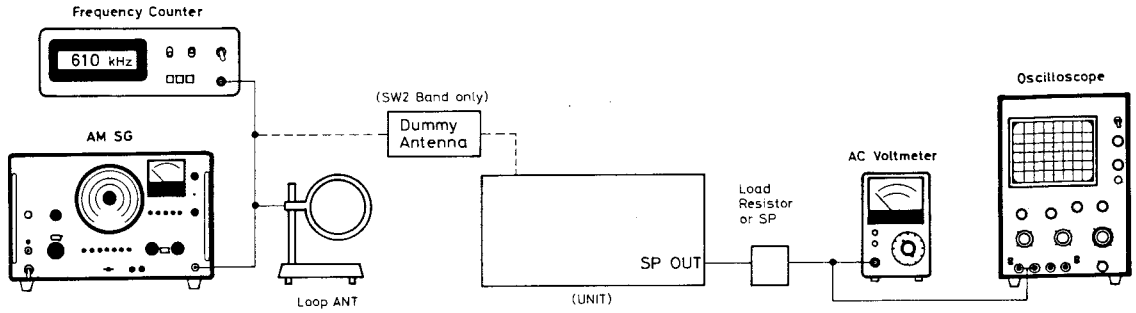


Fig. 2

3. FM Alignment

Adjustment	Equipment Connection	Step No.	Generator Frequency	Tuning	Location to be Adjusted
IF	● FM Signal generator ● FM Sweep/marker generator ● Oscilloscope ● AC voltmeter ● Dummy antenna ● Load resistance ● Frequency counter Connect measuring instruments as shown in Fig. 3 and 4.	1	10.7 MHz (Mod.)		FM, IFT-1, 2 adjust for maximum gain. IFT-1, 2 adjust for symmetric "S" curve (Marker should appear in the middle of "S" curve). Fig. 3.
		2	Repeat Steps to obtain Maximum Output.		
FM Band		3	87 MHz (Mod.)	87 MHz	Set generator frequency to 87 MHz with L-3 (FM oscillator coil). Fig. 4.
		4	108.5 MHz (Mod.)	108.5 MHz	Set generator frequency to 108.5 MHz with TC2 (Trimmer condenser).
		5	Repeat Steps 3 and 4 two or three times to adjust f. cover.		
FM Tracking		6	90 MHz (Mod.)	90 MHz	Adjust L-1 (FM, Tuning coil) to obtain maximum sensitivity. Fig. 4.
		7	106 MHz (Mod.)	106 MHz	Adjust TC-1 (Trimmer condenser) to obtain maximum sensitivity.
		8	Repeat Steps 6 and 7 two or three times to obtain maximum sensitivity.		

○ Use only nonmetallic alignment tools to insure proper alignment.

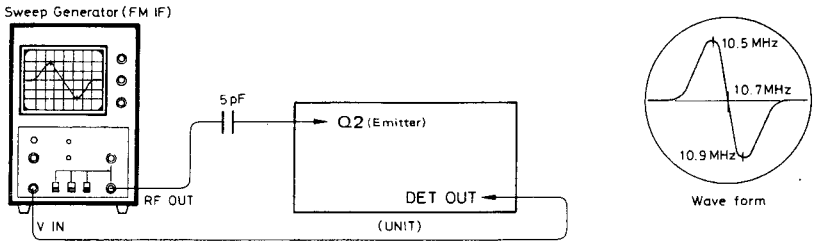


Fig. 3

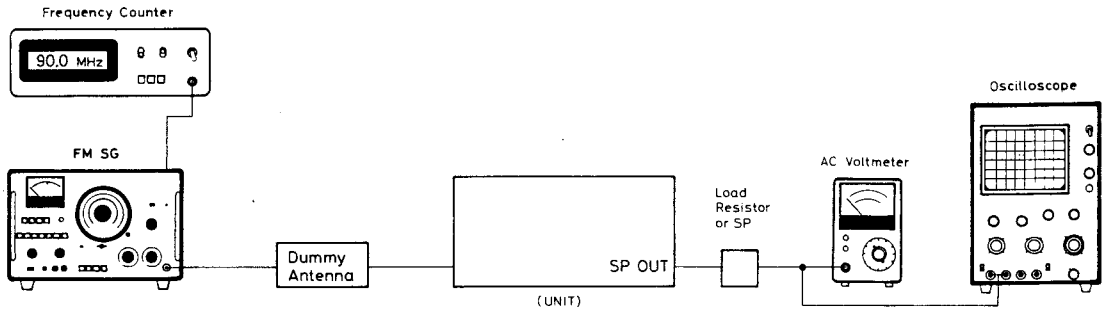


Fig. 4

4. FM MPX Adjustment

Connect test instrument as shown in Fig. 5.

1) 19 kHz Adjustment

Connect frequency counter T.P (IC2 No. 12 pin) and earth, adjust the semi-fixed resistor VR1 for reading of 19 kHz on the counter.

Note: When adjusting 19 kHz in the multiplex circuit, connect a capacitor (0.022 μF) to IC2 No. 2 pin to shut off the signal and noise.

2) Separation Adjustment

a) Set the FM signal generator to 98 MHz and an output of 1 mV (60 dB).

b) Set the stereo signal generator to 90% main signal and 10% pilot signal. Modulation frequency: 400 Hz.

c) Switch the stereo signal to left (or right) and adjust the semi-fixed resistor VR2 to minimize the right (or left) output.

Note: Adjuste VR10 until more than 25 dB separation is obtained between the left and right channels.

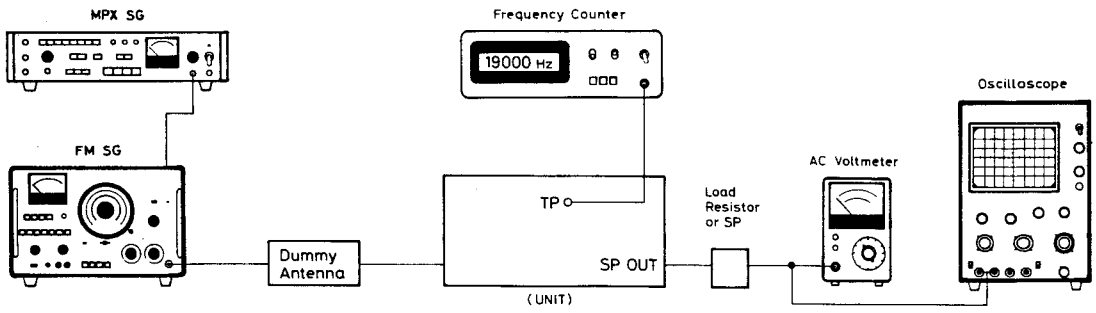


Fig. 5

5. LED Meter Adjustment

Set the recorder to recording mode and apply the signal of −60 dB (1 mV), 1 kHz to Mic input terminal. Turn and adjust semi-fixed resistors VR401 (Lch) and VR402 (Rch) so that the LED lights to 7th. (0 VU)

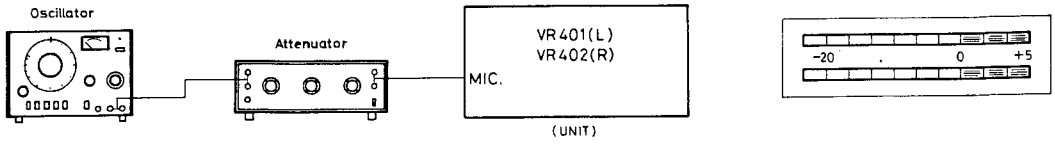


Fig. 6

MECHANICAL ADJUSTMENT

1. Tape Speed Adjustment

With AC.V.M. connected to SP OUT, play a standard tape (f = 3kHz). Insert a screwdriver through the adjusting hole on the motor and adjust the semi-fixed resistor until the frequency counter reads 3 kHz.

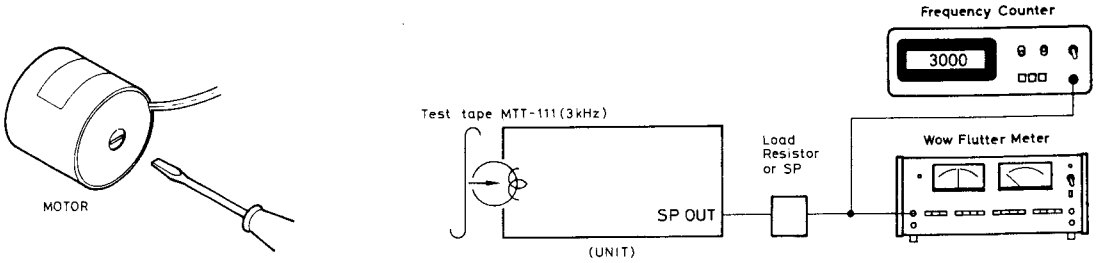


Fig. 7

2. Head Azimuth Adjustment

With AC. V.M. connected to L and R channels SP OUT, play a standard tape (10 kHz, −10 dB). Turn the head azimuth adjusting screw for a maximum and same reading on L and R channels AC. V.M. After the adjustment, secure the screw with a locking paint.

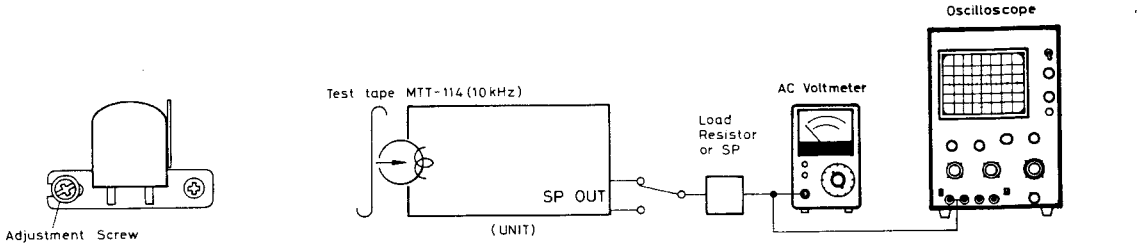


Fig. 8

3. Gap Adjustment

The gap between the center shaft of the flywheel and the flywheel retaining plate should be adjusted within the range of 0.01 to 0.1 mm.

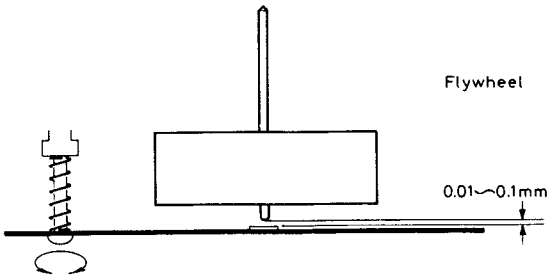
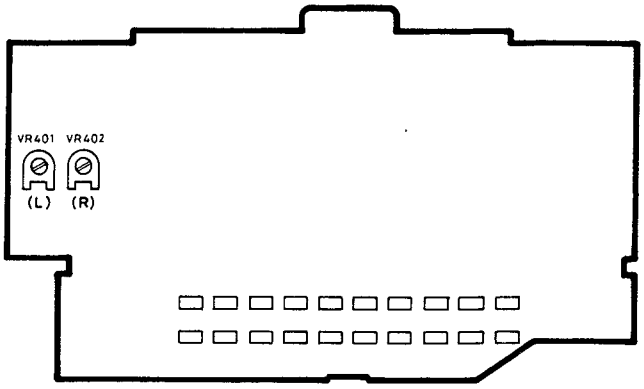


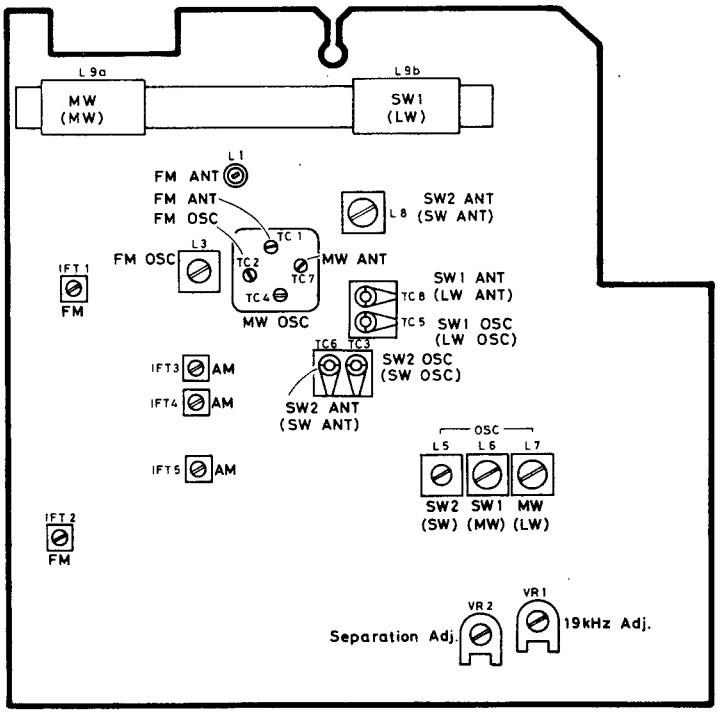
Fig. 9

ADJUSTMENT POINTS



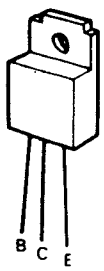
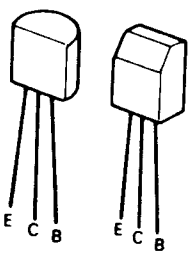
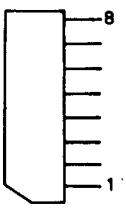
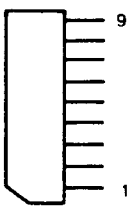
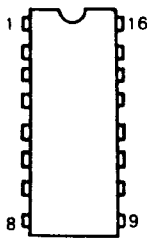
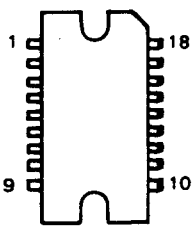
LED LEVEL METER

TUNER



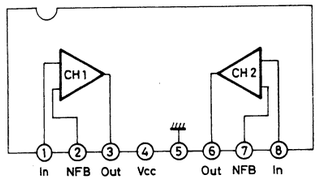
( ) L Series

TRANSISTORS AND IC

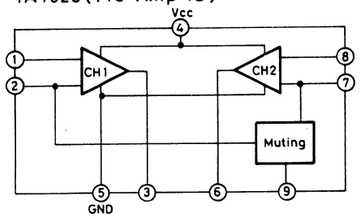
					Top View 	Top View 
2SD726	2SC710 711 1312 2SD355	2SC458 460 535 1342	BA 328	TA7325P	HA11251 BA1320 LB1405	AN7145

IC BLOCK DIAGRAM

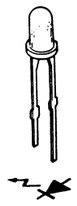
BA 328 (Pre-Amp IC)



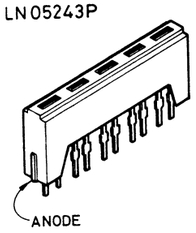
TA7325 (Pre-Amp IC)



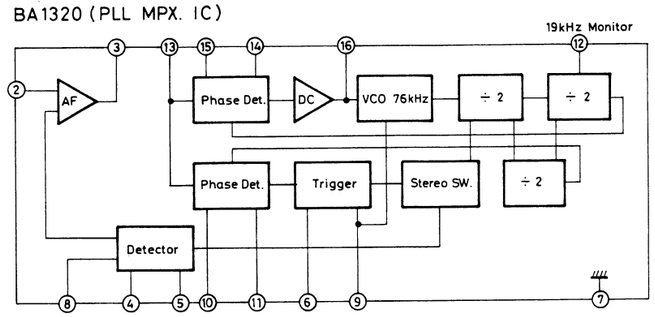
LN28RP



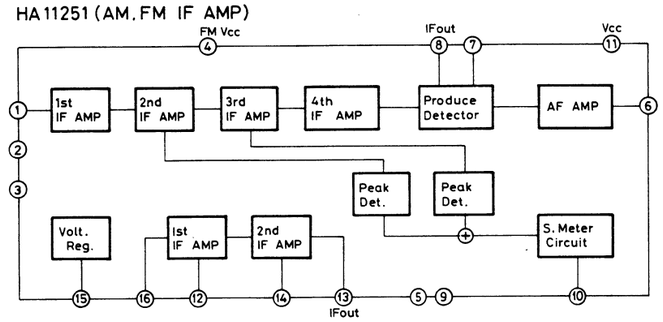
LN05243P



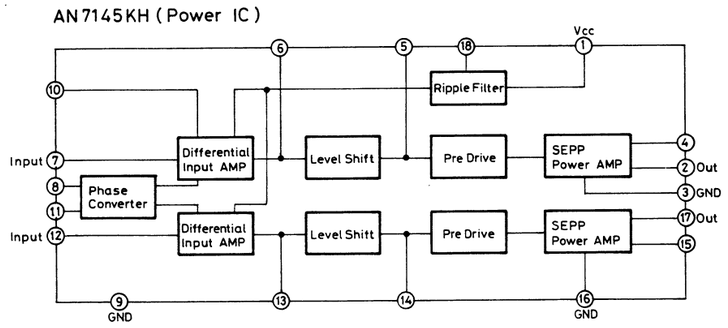
BA1320 (PLL MPX. IC)



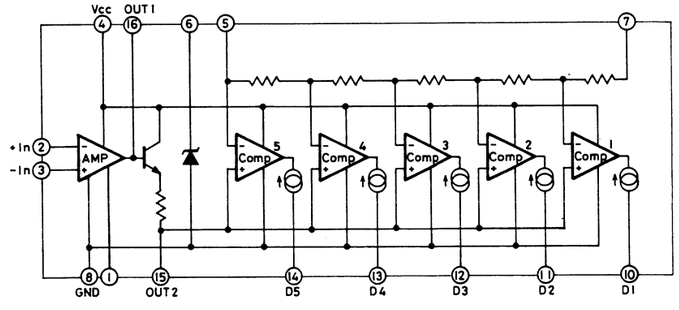
HA11251 (AM, FM IF AMP)



AN7145KH (Power IC)



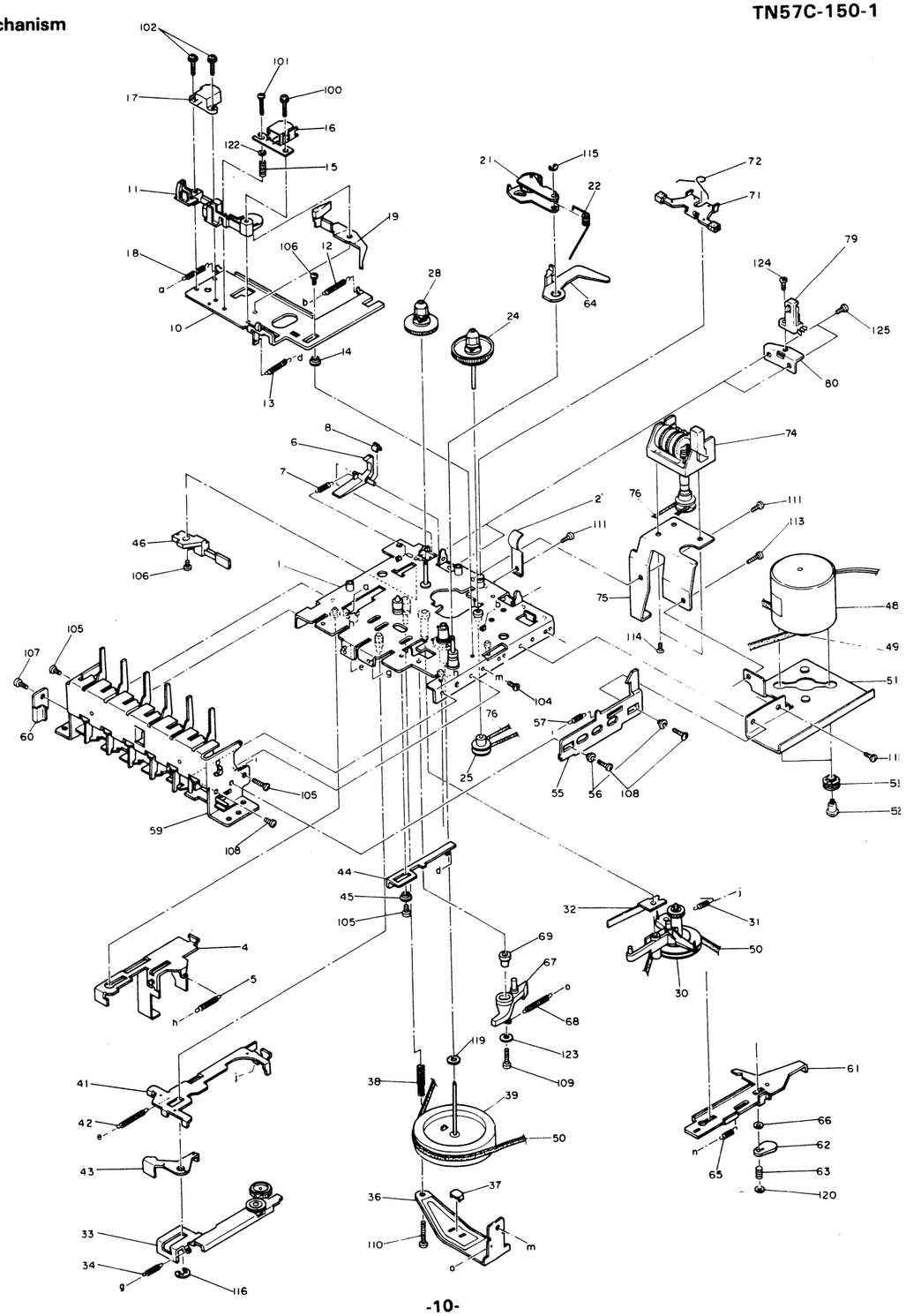
LB1405(LED Drive IC)



EXPLODED VIEW

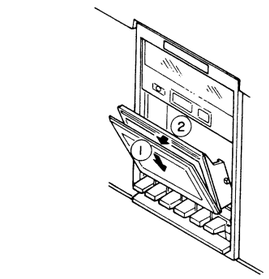
Mechanism

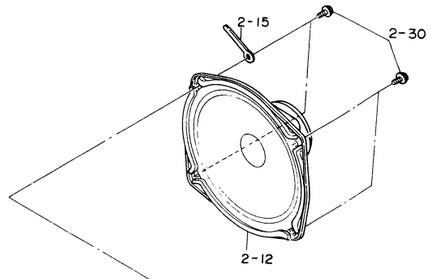
TN57C-150-1

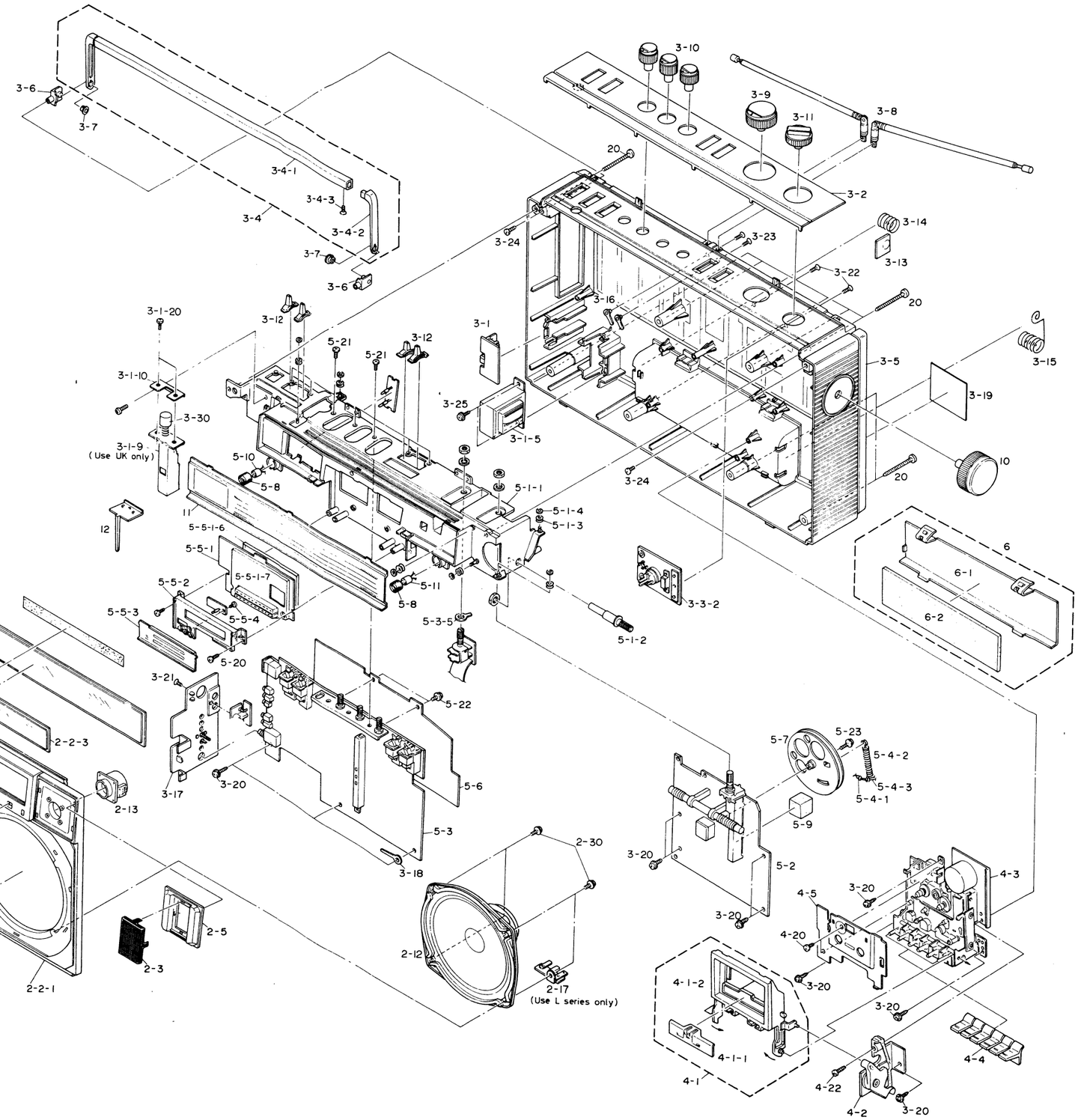


EXPLODED VIEW

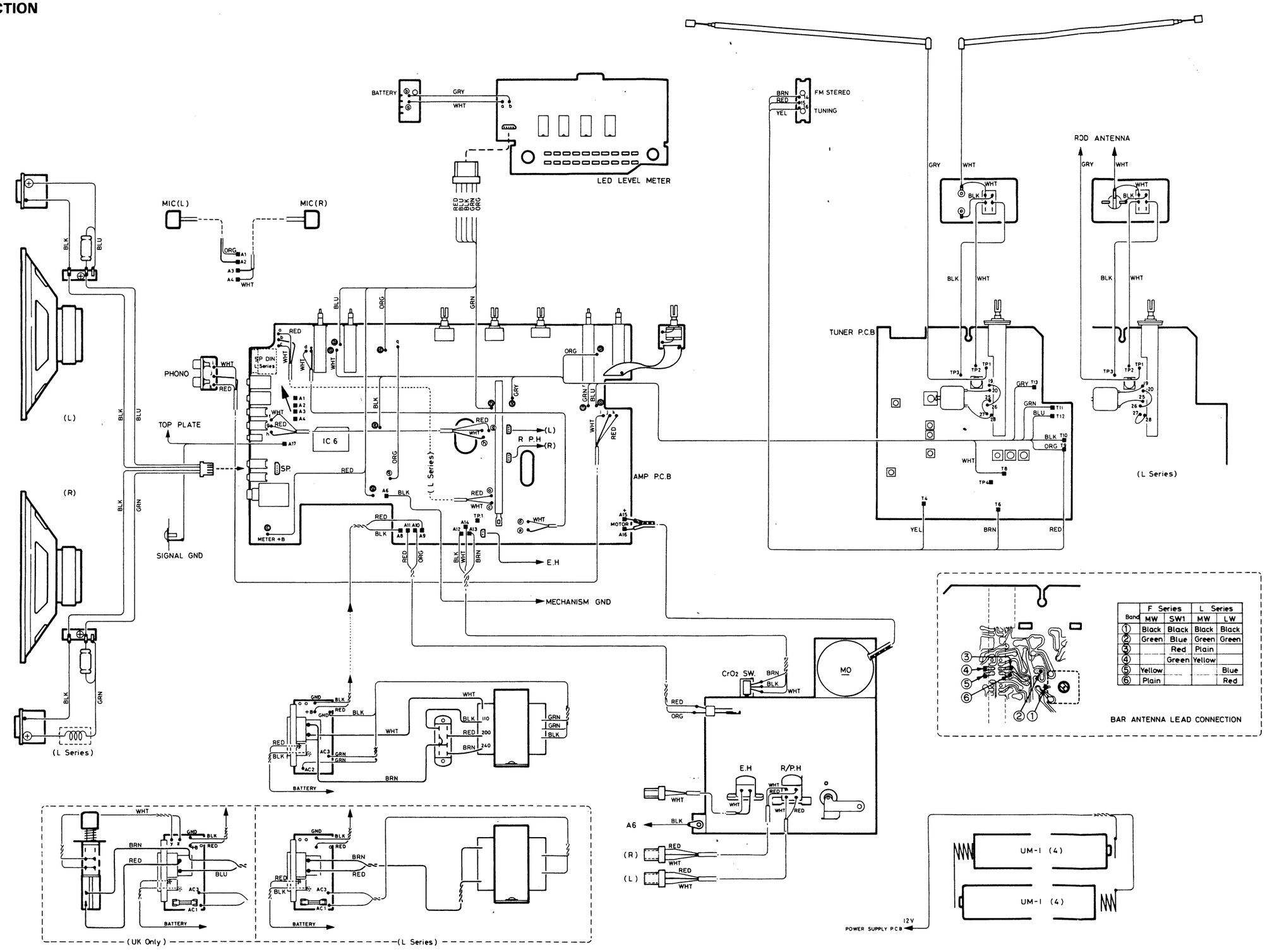
Cabinet







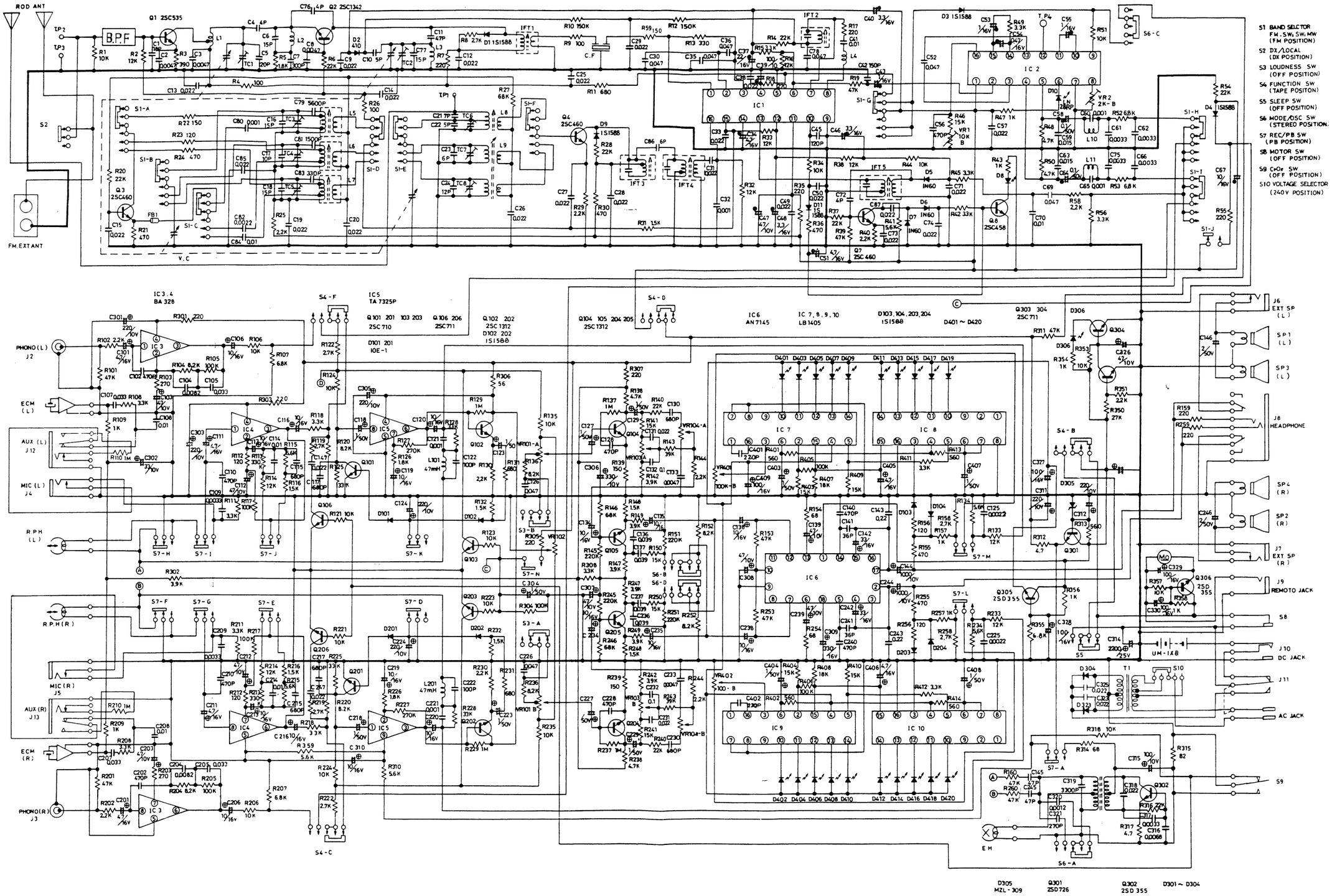
LEAD CONNECTION



Band	F Series		L Series	
	MW	SW1	MW	LW
①	Black	Black	Black	Black
②	Green	Blue	Green	Green
③		Red	Plain	
④		Green	Yellow	
⑤	Yellow			Blue
⑥	Plain			Red

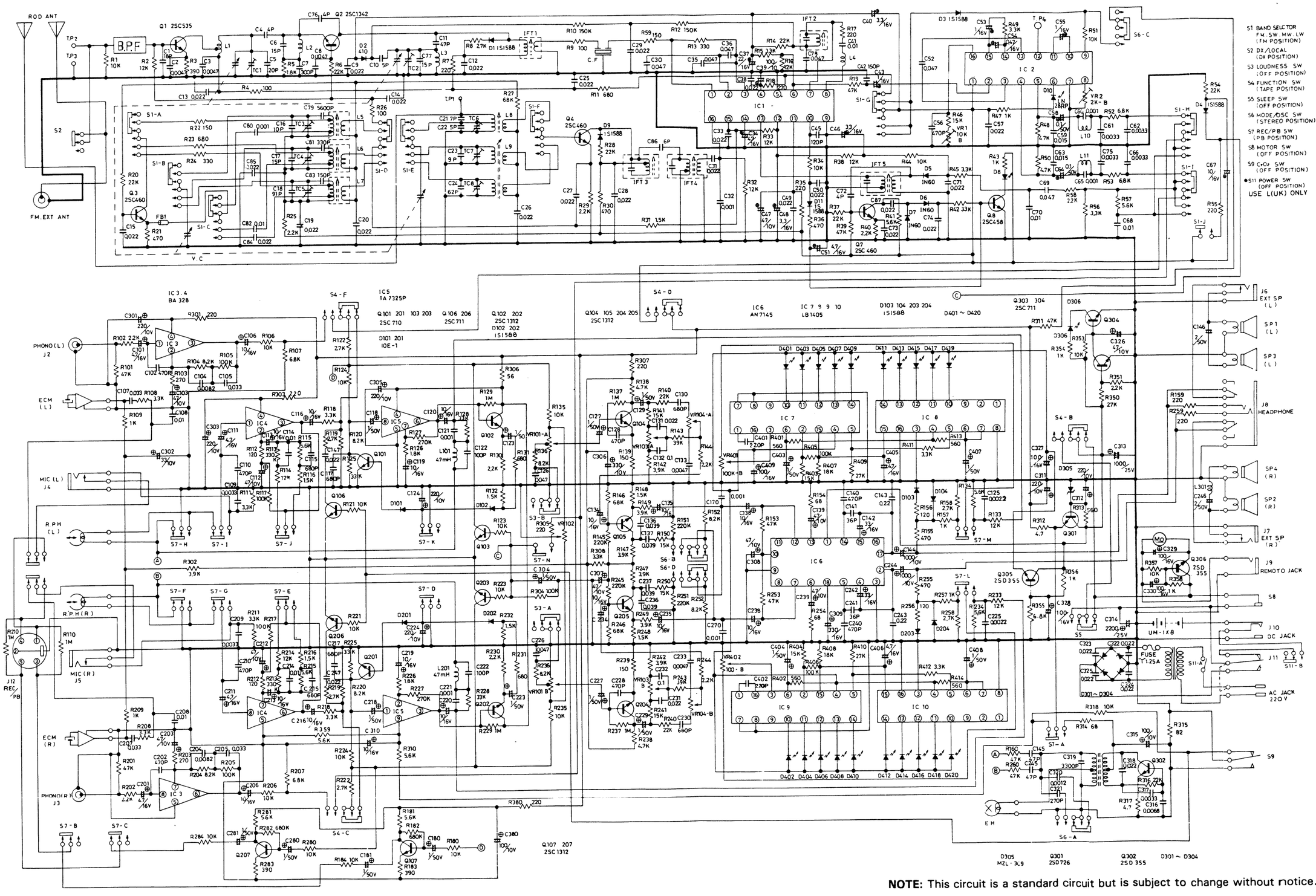
BAR ANTENNA LEAD CONNECTION

SCHEMATIC DIAGRAM (1) 950F (X)



NOTE: This circuit is a standard circuit but is subject to change without notice.

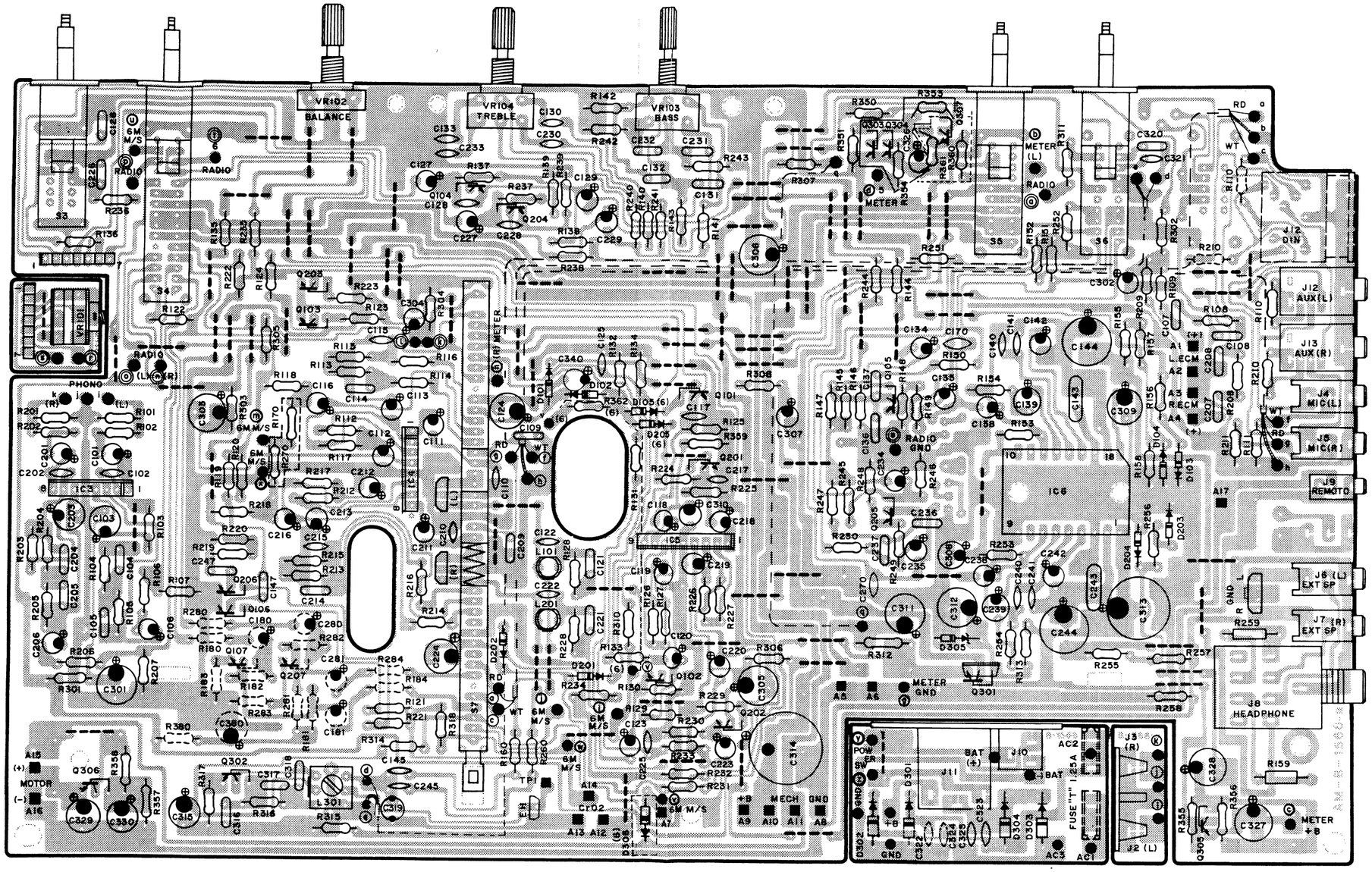
SCHEMATIC DIAGRAM (2) 950L (E), (UK), (GE), (FR)



NOTE: This circuit is a standard circuit but is subject to change without notice.

WIRING BOARD LAYOUT

Amp. Power Supply



TUNER (DC volt)

Q	1	2	3	4	7	8
B	1.2	1.2	1.0	1.1	2.4	0.7
C	7.2	7.2	5.9	8.2	3.7	0.15
E	0.4	0.6	0.5	0.5	1.7	0
Condition	FM		MW			LED ON

AMP

Q	101	102	103	104	105	106	107	301	302	303	304	305	306
B		2.0		0.8	1.1		1.0	9.1	3.0 0.7	0.6	0.05	10.4	10.6
C		7.9		2.9	3.6		2.5	12.0	6.4 5.6	0.05		12.0	12.0
E		1.4		0.16	0.54		0.4	8.5	2.4 0.2	0	0	9.8	10.0
Condition									NORMAL CrO_2				

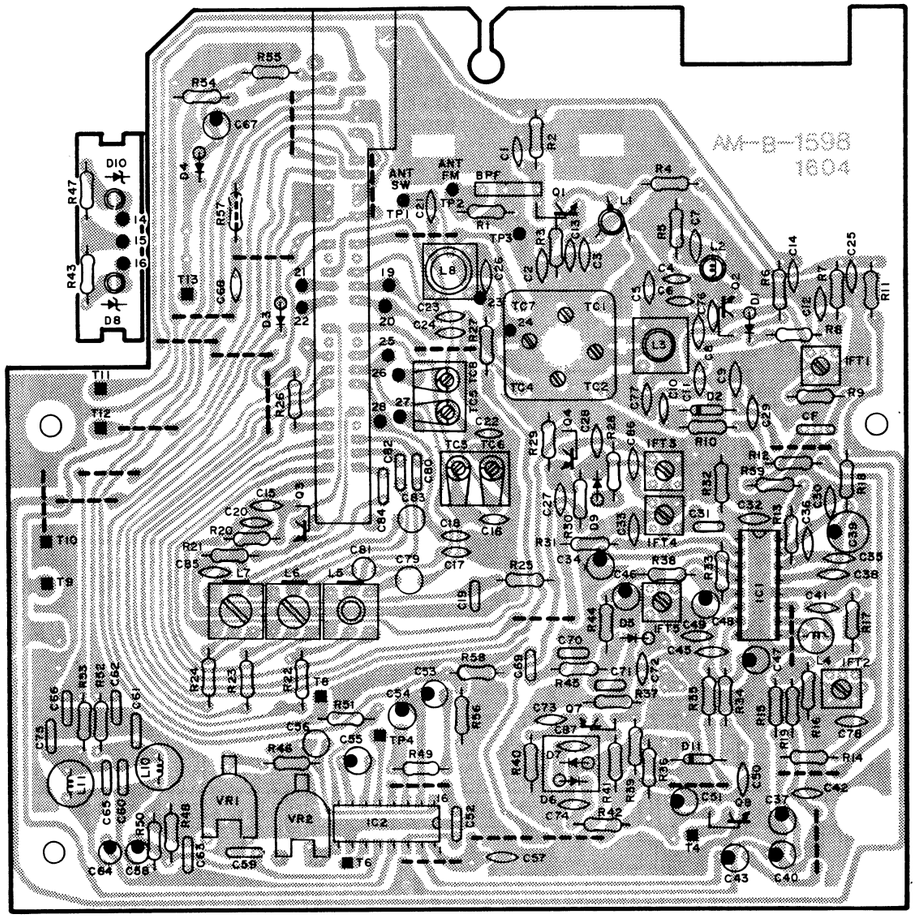
TUNER

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Condition
IC1	HA11251	3.2	3.2	3.2	5.4	0	3.1	3.3	4.5	0	0 0	5.5 5.7	0.9 0.9	0 0	3.4 3.5	1.3 1.3	0.7 0.7	FM AM
IC2	BA1320	8.2	2.9	2.5	(3.7)	(3.7)	6.8	0	0.8	0.04	(2.2)	(2.2)	1.5	2.2	2.2	2.2	2.9	FM ( )Stereo

AMP

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Condition
IC3	BA328	1.5	0.9	3.9	7.6	0	3.9	0.9	1.5											
IC4	BA328	1.5	0.9	3.7	7.6	0	3.7	0.9	1.5											
IC5	TA7325P	0.5	0.08	2.0	7.9	0	2.0	0.08	0.5	1.62										
IC6	AN7145	12.0	6.1	6.1	11.0	0.2	6.1	6.1	2.2	0	6.1	0.5	6.1	6.1	0.2	11.0	—	6.1	10.7	
IC7	LB1405	0.7	0.02	0.02	9.8	0.9	2.8	0	0	0.02	8.3 7.8	←	←	←	←	0.1	—			LED OFF ON
IC8	LB1405	0.6	0.2	0	9.8	1.2	2.8	2.8	0	0.1	8.3 7.8	←	←	←	←	0.1	0			LED OFF ON

Tuner, LED Level Meter



3. REAR CABINET ASS'Y

Ref. No.	Stock No.	Description	Q'ty	Remarks
3-1	9259053	Power Supply Ass'y	1	
3-2	9259075	Top Plate Ass'y	1	
3-3	9259079	Antenna Terminal Board Ass'y	1	
3-4	2835891	Handle Unit R79065-03300 (I)	1	
3-5	1615365	Rear Cabinet R79099-002 (I)	1	
3-6	2345602	Handle Holder R7877-015	2	
3-7	2675042	Handle Bushing R7878-008	2	
3-8	7220148	Rod Antenna AM-K-148	2	
3-9	1225155	Volume Knob R79065-013 (I)	1	
3-10	1225156	Volume Knob R79065-017 (I)	3	Tone, Balance
3-11	1245345	Selector Knob R79065-015 (I)	1	
3-12	1275028	Lever Knob R79065-016 (I)	4	
3-13	2365348	⊕ Battery Terminal R75163-026	1	9258182
3-14	3815074	Battery Spring R75121-061 (I)	1	9258183
3-15	3815096	Battery Spring R79065-040	1	
3-16	2175035	Antenna Terminal R78154-025	1	7740415 (AM-ZE-415) Lead Connector
3-17	7710314	Jack Plate Unit AM-Z-314	1	
3-18	2185232	Cord Cramp R7707-140		
3-20	3311203	WFT Screw A3×16 S/Z	14	
3-21	3331109	OCT Screw A3×12 S/PK	1	2P Pin Jack
3-22	3133310	OC Screw 3×10 B/NI	2	
3-23	3133314	OC Screw 3×14 B/NI	2	Rod Antenna
3-24	3311182	PHT Screw A3×10 S/Z	2	
3-25	3618026	PWT Screw A4×16 S/Z	2	Power Transformer

3-1. POWER SUPPLY ASS'Y

Ref. No.	Stock No.	Description	Q'ty	Remarks
3-1-1	7121568	Power Supply PC Board AM-B-1568-B	1	
3-1-2		Not Used		
3-1-3	7210149	AC, DC Input Socket AM-J-149	1	S9, J10 (DC), J11 (AC)
3-1-4	7460664	Slide Switch AM-S-664	1	S10
3-1-5	7530825	Power Transformer AM-TS-825	1	T1 (110/200/240V)
3-1-6		Not Used		
3-1-7	8120322	Diode SR1K-2LF	2	D301, 302
3-1-8	8700519	Ceramic 0.022μF 50V Z	2	C322, 323

3-2. TOP PLATE ASS'Y

Ref. No.	Stock No.	Description	Q'ty	Remarks
3-2-1	1445214	Top Plate R79099-007 (I)	1	
3-2-2	3790044	Grommet 2×2 B/K	1	

3-3. ANTENNA TERMINAL BOARD ASS'Y

Ref. No.	Stock No.	Description	Q'ty	Remarks
3-3-1 (3-16)	2175035	Antenna Terminal R78154-025	1	
3-3-2	7710305	Antenna Terminal Board AM-Z-305	1	
3-3-3	7740416	Lead Connector AM-ZE-416	1	White
3-3-4	7740417	Lead Connector AM-ZE-417	1	Black

3-4. HANDLE UNIT

Ref. No.	Stock No.	Description	Q'ty	Remarks
3-4-1	1285106	Handle R79065-019 (I)	1	
3-4-2	2375022	Handle Arm R79065-020 (I)	2	
3-4-3	3133310	OC Screw 3×10 B/NI	2	

4. COMPLETE MECHANISM ASS'Y

Ref. No.	Stock No.	Description	Q'ty	Remarks
4-1	9258171	Cassette Holder Ass'y	1	
4-2	9258174	Damper Ass'y	1	
4-3	2835896	Mechanism Ass'y R79113-30000	1	TN57C-150-1
4-4	1255244	Push Button R79065-018 (I)	6	
4-5	1715578	Mechanism Cover R79065-035 (I)	1	
4-6	2365516	Rec, Sub Plate R79065-024	1	
4-7	7740406	2P Lead Connector AM-ZE-406	1	E. H.
4-8	7740407	3P Lead Connector AM-ZE-407	1	R/P H. (L ch)
4-9	7740408	3P Lead Connector AM-ZE-408	1	R/P H. (R ch)
4-20	3110013	PH Screw 2.6×4 S/BZ	2	
4-21	3311181	PHT Screw A3×8 S/Z	1	
4-22	3615074	PHDT Screw 3×16 S/Z	1	Damper Ass'y

4-1. CASSETTE HOLDER ASS'Y

Ref. No.	Stock No.	Description	Q'ty	Remarks
4-1-1	1445213	Plate R79065-039 (I)	1	
4-1-2	2165244	Cassette Holder R79065-005 (I)	1	

4-2. DAMPER ASS'Y

Ref. No.	Stock No.	Description	Q'ty	Remarks
4-2-1	2165245	Damper Holder 79065-037 (I)	1	
4-2-2	2325180	Damper Operation Plate-1 R78149-018	1	
4-2-3	2325188	Damper Operation Plate-2 R79065-042	1	
4-2-4	3311200	WFT Screw A3×10 S/Z	1	
4-2-5	3825910	Spring-1 R78149-021	1	
4-2-6	3825911	Spring-2 R78149-022	1	

4-3. MECHANISM ASS'Y TN57C-150-1

Ref. No.	Stock No.	Description	Q'ty	Remarks
1		Chassis Ass'y 1260-01-81	1	
2		Pack Spring Ass'y 959-01-02	1	
3				
4		Record Slide Lever Ass'y 1260-02-01	1	
5		Spring 18-05-02B	1	
6	0002345	Record Safety Lever 910-03-01	1	
7		Spring 1260-02-02	1	
8	0002020	Record Safety Lever Stopper 268-05-15	1	
10		Head Panel 1260-03-01	1	
11	0002212	Head Block 1200-03-02	1	
12		Spring 1260-03-02	1	
13		Spring 1349-03-01	1	
14	0001848	Collar 408-04-11	1	
15	0001494	RPH Spring 48-04-08	1	
16	7190209	Rec/Play Head AM-H-209	1	
17	7190192	Erase Head AM-H-192	1	
18	0002341	Spring 1260-03-03	1	
19	0002229	Sensing Plate Ass'y 1200-11-91		
21	0002207	Pinch Roller Ass'y 1260-04-91	1	
22		Pinch Roller Spring 1260-04-02	1	
24	0002347	Take-up Reel Ass'y 1260-05-91	1	
25		Drive Pulley 16-15-04	1	
26				
27				
28	0002349	Supply Reel Ass'y 1260-06-91	1	